

Emergency Power and Year 2000

Introduction:

There is a possibility that your local electrical utility company will experience some Y2K problems. The problems may lead to incorrect voltage, frequency shifts, and short or long power outages. Even if your local utility is Y2K compatible, they are interconnected with other utility systems that may experience problems.

In addition, your emergency generators when called upon to act due to above utility problems may not be able to rely on their automatic controls due to their own Y2K problems.

Proposed Actions:

To prepare your facilities for these Y2K events we **recommend** that the following actions be taken:

- ◆ Contact your electrical utility company to determine if they are Y2K compatible. You should also determine if they have taken appropriate steps to insure that any utility system they are interconnected with has taken appropriate Y2K actions.
- ◆ We **recommend** that you check each Emergency Electrical System (generators, transfer switches, etc.) to see if there are components which are microprocessor controlled (digital controllers). Verify through the manufacturer that the digital controllers and their software are Y2K compliant. Also, verify with the manufacturer correct **manual override** procedures. **Manual override** means disabling any digital controllers and running the generator(s). If your generator(s) include any automatic synchronizing, **manual override** would include **manual synchronizing**. Running in manual mode is not normally tested during the JCAHO monthly test and may require additional training for your staff.
- ◆ After performing all the testing and training above we **recommend** that you conduct a complete test of your Emergency Electrical System using both automatic controls and **manual override**. This test should be conducted with as little impact to your facility as possible. (See, **Additional Recommended Generator Testing Details**, below)
- ◆ We **recommend** that you also conduct a disaster drill simulating weather conditions expected on January 1, 2000. This drill should include opening the main electrical feeders to your facility to simulate a total utility

outage. This test will test all functions of your facility including clinical staff response. Consideration should be given to using support staff in non traditional roles i.e. observers, runners, food servers and transporters, etc. to help relieve some of the additional workload on medical staff.

- ◆ We **recommend** that you check your incoming power equipment. It may not monitor for incorrect voltage on all three phases or frequency shifts. Additional monitoring equipment may have to be leased or installed to prepare for Y2K. Under and over-voltage protection relays are normally installed on two but not all three phases of incoming utility power circuits. Frequency relays are almost never installed on incoming utility power circuits.
- ◆ Provide feedback on lessons learned so that other facilities can review your solutions and incorporate them as needed.

Types of problems that may be encountered:

- ◆ Equipment that is essential to the operation of the Medical Facility for an extended period of time may not be on emergency power.
 - Condensate pumps may not be on emergency power. After a few hours of operation your boilers may run low on makeup water and some buildings may lose heat due to the backup of the condensate.
 - Food service may not be able to feed patients in the normal manner due to restricted availability of elevators and dish washing equipment not on emergency power.
 - Food service may not be able to cook or heat the food needed to give the patients a hot meal necessitating a cold meal.
 - Refrigerators for food storage and other needs may not be able to meet required temperatures after 4 to 5 hours without power.
- ◆ If the generators have only been tested under partial load and only for the minimum time required by JCAHO, the generators may have difficulty performing for extended times periods and under greater loads.

Additional Recommended Generator Testing Details:

- ♦ Testing of the generators and their auxiliary equipment must be accomplished first **before** any testing of the rest of the emergency power system. Recommend a test under load for a period of eight (8) hours. This test will determine if your equipment is fully functional and can be run for extended periods of time. Recommend loading the generators with a load bank as follows:
 - ⇒ **30-40%** of generator name plate for the first two (2) hours.
 - ⇒ **50-60%** of generator name plate for the next hour
 - ⇒ **75-80%** of generator name plate for the next hour
 - ⇒ **100%** of generator name plate for the next hour
 - ⇒ **110%** of generator name plate for the next two (2) hours (If your equipment is rated for 110% overload otherwise 100%)
 - ⇒ **100%** of generator name plate for the last hour.
 - ⇒ **No load** as recommended by the manufacturer for a cool down period.
 - ⇒ Full **visual monitoring** of the entire test must be performed. Any equipment failures must be corrected and the test restarted.

Defining and Coordinating the test:

- ♦ Close coordination with clinical and technical staffs along with the electrical utility company are essential to ensure continuity of quality patient care
- ♦ Only after testing of generators and their auxiliary equipment should the test of Emergency Power System be performed. We **recommend** that you simulate a utility outage by opening the main feeder breakers to your facility for the entire time of the test. This test should last long enough (aprox. 8 hrs.) so that you are able to determine if additional equipment needs to be placed on emergency power. If you perform this recommended utility outage test, you must coordinate with your electrical utility company prior to, during and after the test.
- ♦ This test should also be done in conjunction with a disaster drill to insure that all employees understand the limitations of being on total emergency power.

- ◆ We strongly recommend that this test be run in January or February so that weather conditions similar to January 1, 2000 can be fully simulated.
- ◆ Insure that all fuel tanks serving your Generators contain clean fresh No. 2 Diesel and that the tanks are full.
- ◆ If your facility has experienced power outages in recent times and the staff understands how to operate on reduced electrical capacity for an extended period of time, then you may want to schedule this test on a weekend when most discretionary services are inactive or you may need to reduce the scope of this drill to a partial documentation from the electrical utility company or test different parts of the electrical distribution system.
- ◆ If however, you are uncertain as to the electrical utility company's Y2K readiness or how your MTF will operate with a power outage for 8 hours or more, then you should run the drill as outlined above.